

CITY OF LOUISVILLE: SUSTAINABILITY ROADMAP

Moving Louisville toward a more sustainable future.

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Executive SUMMARY

This roadmap addresses three primary focus areas for the City of Louisville's sustainability initiatives. These include: Energy efficiency, Resource conservation and Localization. Each focus area identifies sustainability goals and activities and outcomes for (1) City operations, and (2) Louisville's Commercial and Residential sectors. Each focus area includes multiple strategies to address specific aspects or concerns along with specific approaches to achieve success. This will ultimately benefit the environment and bring value to Louisville resulting in expected increases in investment in local businesses and revenues for the City.

This roadmap will remain a flexible document to be updated and used to help Louisville to continue as a forward-thinking community and as a great place to live. Commitment to these goals will generate a sense of community and purpose among residents.

MISSION

Promoting sustainability through energy efficiency, resource conservation, and localization to better the environment, social well-being, and economic vitality of the City of Louisville.

Introduction

As our environment continues to feel the effects of human behavior, community leaders must direct policies towards a sustainable future. Short-term, or status quo thinking will only limit our community's ability to remain successful in the region. The City needs a clear framework of actionable items and credible guidance to achieve goals that support the environment and the community in a responsible way. The purpose of this report is to provide an adaptable roadmap to advise the current and future City leadership as they continue to build Louisville's sustainable future.

BUSINESS CASE FOR SUSTAINABILITY

Businesses and governments are increasingly exploring sustainability initiatives because of three primary drivers: Values, Compliance, or Opportunity.

Values: This refers to the philosophy of acting because it's "the right thing to do." By reducing our impact on the environment, we act in our overall best interest while demonstrating the City's commitment to the environment and our community members.

Compliance: These are the "things we must do" and it is driven by policies and regulations that roll down with the increased knowledge of our impacts on our own ecosystems.

Opportunity: Finally, as measureable, negative, changes are occurring to the earth, a great deal of focus and energy has been placed on sustainability. Louisville can benefit from this societal change if it acts in the planet's and its own self-interest. The benefits of utilizing smart growth initiatives have implications for both the economic, civic and environmental health of our community.

LOUISVILLE'S BIG THREE

ENERGY EFFICIENCY

Definition: Using less energy to provide the same (level or quality of) service¹.

Goal: Reduce the City and residents of Louisville per capita energy consumption and make the City's energy supply and systems cleaner and more efficient, thereby reducing the City's carbon footprint, improving building infrastructure, reducing energy costs, and stimulating jobs and commerce.

RESOURCE CONSERVATION

Definition: The practice of selecting and using products, processes, or technologies that minimize the overall use or consumption of resources.

Goal: Reduce resources consumed through substitution, recycling, and advanced technologies.

LOCALIZATION

Definition: The practice of investing in local resources to produce a measurable portion of the goods, services, food and energy it consumes.

Goal: Provide education and information sources that promote and support local resources so that 50-years from now, Louisville will still be a great place to live.

¹ From Lawrence Berkeley National Laboratory, What's Energy Efficiency? At <http://eetd.lbl.gov/ee/ee-1.html>

ENERGY EFFICIENCY

GOVERNMENT CONSUMPTION		
Decrease fossil energy consumption through efficient and renewable energy sources.		
TIMING	STRATEGY	APPROACH
2015	1) Set and publish energy savings and renewable goals.	<ul style="list-style-type: none"> Based on Xcel Energy goals, reduce gas and electric use by 1.27% per year to meet 10% by 2025 (with a buffer). 15 year Simple payback.
	2) Track and report on government energy use.	<ul style="list-style-type: none"> Leverage the staff's existing efforts in tracking facility energy use by expanding viewership through a web portal or similar technology. Update results quarterly until real-time tracking available. Perform utility analysis of facilities. Perform energy audits of facilities.²
2015-2017	3) Implement cost effective energy measures.	<ul style="list-style-type: none"> Cost effectiveness should be based on costs over the entire life of the product and should meet economic criteria set by the City.³
2016-2018	4) Promote cost efficient energy conservation and renewable energy adoption and incorporate into work plans and budgets.	<ul style="list-style-type: none"> Work toward, recognize, and reward energy efficiency efforts.⁴
	5) Track and report failure/success of implemented governmental energy conservation efforts and programs.	<ul style="list-style-type: none"> Report on direct energy conservation efforts.⁵ Report on efficiency improvements resulting in energy use and cost reductions.⁶

² These audits could be done internally with oversight, or the City could hire someone to perform assessments.

³ Life cycle costing analysis will include costs and benefits, including adders for economic, social well-being, and environmental considerations. Analysis should consider the entire community, not just the City and owner.

⁴ Louisville and/or its citizens have done quite a bit of energy efficiency, part of the strategy is to simply take credit and provide recognition.

⁵ Examples include solar gardens and building retrofits.

⁶ Examples include adopting building codes, setting up an energy recognition program.

ENERGY EFFICIENCY

ECOSYSTEM		
Increase energy efficiency in residential and commercial properties by promoting conservation efforts through showcasing and rewarding leadership		
TIMING	STRATEGY	APPROACH
2015	1) Set energy savings and renewable goals.	<ul style="list-style-type: none"> Based on Xcel Energy goals, reduce gas and electric use by 1.27% per year to meet 10% per capita by 2025 (with a buffer!).
	2) Actively track and report on City-wide energy use.	<ul style="list-style-type: none"> Include information from Xcel Energy. Include details about City buildings and demographics.
	3) Encourage and publicize residential household energy conservation efforts.	<ul style="list-style-type: none"> Provide case studies on City website. Facilitate comparison of use to like neighbors to encourage other households to reduce energy use.⁷ Track and publish participation in programs and reductions in energy consumption. Find/report on interesting projects within the City.
	4) Promote commercial energy efficiency and corporate citizenship.	<ul style="list-style-type: none"> Publicize energy savings. Generate friendly competition between commercial entities. Provide business awards and recognition for energy conservation efforts. Provide certification program. Find and report on projects (LEED buildings, energy efficiency upgrades, etc.)
2016	5) Develop and maintain energy efficiency website	<ul style="list-style-type: none"> Report on government energy use. Information and tips on energy conservation. Information on available rebates programs. Drive Louisville citizens to site via social media. Facilitate the publicizing of, administration of, and enrollment in available energy efficiency programs.

⁷ This may take the form of providing average usage values for typical homes either total or by square footage of home as a benchmark. It could also take the form of comparing actual usage to neighbors.

RESOURCE CONSERVATION

WATER		
Conserve water and take steps to ensure an adequate supply is available in the face of droughts and regional climate changes		
TIMING	STRATEGY	APPROACH
ONGOING	1) Develop City water conservation plan.	<ul style="list-style-type: none"> • Encompass Comprehensive Plan Updates and climate impacts with up-to-date raw water needs. • Collect/publish water usage data (residential, commercial, city) • Project future water needs • Identify available sources • Incorporates the components of the Comprehensive Plan.
	2) Provide a cohesive direction for water conservation.	<ul style="list-style-type: none"> • Disseminate tips and suggestions. • Work in coordination with County.
	3) Promote reduced residential and commercial water use.	<ul style="list-style-type: none"> • Provide education and incentive programs for water saving measures.
2016	4) Inventory and evaluate municipal owned gardens and landscapes in connection with water use.	<ul style="list-style-type: none"> • Plan to swap to a water wise landscape. • Identify vegetation and trees likely to struggle with changing temperatures and possible variations in moisture. • Identify species more adaptable to climate changes. • Identify measures and opportunities for responsible reduction of water use. • Measure and calculate benefits.
	5) Progressively implement low impact development (LID) ⁸ practices as a comprehensive land planning and engineering-design approach.	<ul style="list-style-type: none"> • Adopt approaches that work with nature to manage storm water as close to its source as possible. • Employ best practices in stormwater conservation design and operation.

⁸ LID is an approach to land development (or re-development) that works with nature to manage storm water as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat storm water as close to its source as possible. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat storm water as a resource rather than a waste product.

RESOURCE CONSERVATION

FUEL		
Reduce fuel consumption through emphasis on design and systems that efficiently utilize fuel.		
TIMING	STRATEGY	APPROACH
ONGOING		
2017	3) Develop a balanced transportation system that serves the entire City, is designed for users of all ages and ability levels, and invites and stimulates non-vehicle transportation.	<ul style="list-style-type: none"> • Develop a Transportation Master Plan that identifies alternative means of transportation so that citizens of all ages and abilities can safely and comfortably walk or bike rather than utilize vehicle transportation. • Reduce personal travel fuel usage by providing safe, pleasant non-vehicle means (bike and pedestrian paths, quieted streets) of accessing schools, commercial areas, recreational facilities, and municipal services such as the library. • Provide a safe, non-vehicle, means of linking to Park-N-Rides, bus stops, circulator buses, and other mass transit systems. • Promote and expand programs that offer RTD Eco Passes and ride sharing options to municipal and commercial employees.

RESOURCE CONSERVATION

WASTE		
Reduce production and increase landfill diversion of waste products		
TIMING	STRATEGY	APPROACH
2015	1) Promote, implement, and measure waste reduction and recycling programs.	<ul style="list-style-type: none"> The City should continue to work with governmental, private and not-for-profit agencies to develop regional approaches to solid waste reduction and management. The City should continue its efforts to reduce waste generation from its municipal operations and explore methods for additional reduction. The City should consider the purchase of supplies with recycled content when feasible. Promote diversion from the landfill of construction and demolition refuse.
	2) Require consideration of the environmental and economic costs, risks, benefits, and impact from a life-cycle perspective when making, planning, contracting, purchasing, and making municipal operating decisions.	<ul style="list-style-type: none"> Implement a system that incorporates evaluation of these factors prior to initiation of projects and purchases so that end of life reuse/recycling/disposal options are known.
2016	3) Reduce single uses materials single-use bags.	<ul style="list-style-type: none"> Phase in alternatives to single-use items including but not limited to shopping bags, styro containers, plastic water bottles, etc. Provide credit for buyers' bags. Promote Louisville by making available unique multi-use bags.

RESOURCE CONSERVATION

WASTE		
Reduce production and increase landfill diversion of waste products		
TIMING	STRATEGY	APPROACH
2016	4) Develop educational programs to encourage avoidance of commercial and residential waste generation.	<ul style="list-style-type: none"> Disseminate waste reduction information on the city's website; options for recycling, hazardous waste drop-off, scrap metal drop-off, electronics waste, hard to recycle materials, etc. Promote public education related to the value, methods, and techniques of recycling, resource recovery, waste reduction and purchasing alternative to non-recyclable products.
	5) Expand recycling programs.	<ul style="list-style-type: none"> Expand tree-branch and leaf drop-off sites. Continue and expand scrap-metal recycling at a City-designated location. Expand current residential trash, recycling, and compost collection programs to commercial entities. Incentivize and promote restaurant, grocery and other commercial facilities composting of excess and waste compostable materials.
2017	6) Adopt local code requirements to reduce waste.	<ul style="list-style-type: none"> Require City to research and consider the sustainability of products purchased. Development of purchasing policy Require zero-waste collection at public events. Support citizen's use of the Boulder County Hazardous Materials Management Facility through a no co-pay program. Require triple-bin waste collection at city facilities (recyclables, compostable, trash).

LOCALIZATION

FOOD		
Establish Community Garden program and support local food options.		
TIMING	STRATEGY	APPROACH
2015	1) Develop a system of community gardens.	<ul style="list-style-type: none"> • Develop a pilot Community Garden. • Evaluate results and establish guidelines for future garden sites. • Post information on City website and LSAB social media outlets. • Conduct workshops for community members.
2016	3) Develop Cottage Foods sales program allowing citizens to sell locally produced items such as chicken, honey, veggies.	<ul style="list-style-type: none"> • Research and develop policy recommendation for Cottage Food sales program.
ONGOING	4) Provide resource information about local food economy (backyard gardens, local farming, community share agriculture, etc.	<ul style="list-style-type: none"> • Track (via community self-reporting) number of backyard gardens • Track (via community self-reporting) Community Supported Agriculture (CSA) participation. • Promote purchase of Colorado or regionally produced items

TRANSPORTATION		
Expand and support use of energy saving modes of transportation.		
TIMING	STRATEGY	APPROACH
ONGOING	1) Incentivize and promote the use of Energy efficient vehicle	<ul style="list-style-type: none"> • Evaluate usage data from city owned charging stations. • Encourage businesses to include recharging stations (as appropriate) in their building or remodeling plans. • Promote the implementation of efficiency vehicles in the private sector • Over time, replace City vehicles with energy

		efficient vehicles (hybrid, electric, etc.)
	2) Make Biking a preferred mode of transportation.	<ul style="list-style-type: none"> • Conduct an inventory of bike parking • Determine action plan to encourage biking; especially for spike events such as Street Faire, Farmers Market, etc. • Develop maps and way finding signage • Develop a bike sharing program
	3) Enhance Louisville's Walkability	<ul style="list-style-type: none"> • Collect data (community feedback perception, safety concerns, etc.) • Improve cross-walks – signage, painting, awareness campaign • Safe routes to school; partner with BVSD

COMMUNITY		
Attract and support an economically diverse housing and and business environment.		
TIMING	STRATEGY	APPROACH
ONGOING	1) Encourage sustainable business practices in business development and retention processes..	<ul style="list-style-type: none"> • Work with Business Retention and Development Committee and the City's Economic Development Director.
	2) Provide resource information about the benefits of shopping locally. OMIT THIS ENTRY	<ul style="list-style-type: none"> • Include local business contribution in City reports. • Track trends and impact on city resources. • Publish localization success stories.
	3) Support live/work opportunities in Louisville. .	<ul style="list-style-type: none"> • Increase work where you live opportunities

Implementation Notes:

- Department owner – who will implement? Dave S. should not own everything.
- Note problem areas/pain points
- Same item can be in multiple sections; use numbering scheme and when you repeat the items, reference the number (ex: Same as 1a in Localization)

Transportation can be broken down by mode:

1. Vehicles – gov fleets, car pooling
2. Personal Vehicles
3. Transit Passes
4. Actual Service – bus routes, how to improve, needs, effectiveness of service, etc.
5. Incentive Programs and Rewards – how to engage kids, prizes, etc.

Ideas

- Spike events (Street Faire) – Niwot valet parking for bikes (staking rack). Agency in charge could host parking and watch bikes.

Community Education and Outreach

- Road signs, ads on buses – not real effective
- Use targeted communication instead – people who go to rec center or library for example (what do you want to tell them)
- Message on checkout receipt
- BVSD – walk, bike, dear parents
- Messaging should be something specific and targeted (neighborhood newsletter, HOA, etc.)
- Cost, ROI – keep it simple. Could use High, Medium, Low impact
- How to measure things: if you improve the real and perceived safety at crosswalks, you support more people walking and in turn people will walk more!
- County meets with Transportation, Public Works and Planning Staff on a regular basis.
- Some projects in the works: Community-wide Ecopass, Highway 42 underpass, McCaslin bus – bike shelter, BVSD staff Ecopass.

DRAFT

Appendix 1: Sustainability Program Justification

The Roadmap lays out a structured program with measurable goals and each of these goals have been selected and structured for important reasons. This Appendix 1 presents the underlying reasons or motivations to undertake a proactive sustainability program.

There are three critical questions should be considered:

1. Why should the City embark on a proactive sustainability effort?
2. How and what goals should be set and measured?
3. What are the important steps to implementing a more proactive effort?

Each of these three questions is addressed separately below:

Why should the City embark on a proactive sustainability effort?

However, there are several documented benefits of energy efficiency to participants and municipalities⁹.

These include:

- **Energy cost savings** - Energy conservation is simply the lowest cost energy resource for both utilities and end users (Xcel DSM plan filings). Both the City and its residents have shown a strong willingness to invest in renewable energy projects (including solar farms and small PV installations). Additionally, local surveys have shown that there is a strong interest and commitment by Boulder County residents to sustainability¹⁰. There are multitudes of documents (such as utility potential study documents) showing that energy efficiency is economically attractive from the standpoint of the utility, the end user and society. The City should focus on optimizing resource allocation both internally and for residents.
- **Accessing available funding** - Funding for energy efficiency programs and measures is available to both the City and residents of Louisville. Colorado energy users all pay a “DSM rider” on their utility bills. This rider raises funds to implement utility sponsored energy conservation programs. Organizations and individuals that actively participate in programs gain significant benefits and are the “winners.” This is opposed to non-participants who only pay, and do not gain direct benefits. Louisville and its Citizens should undertake to participate in programs. Enhanced participation and the attending increase in revenue sources alone is enough reason to justify a reasonable level of engagement.

⁹ Utilities have even more to gain from energy efficiency programs. Because we are not an energy utility, the benefits to the city do not include many of the benefits to energy utilities.

¹⁰ Cite boulder county survey results document (DSz sent around earlier)

- **O&M cost savings** - Replacement of newer, longer lasting equipment reduces costs to both residence and business owners. Such savings is freed up to spend on other items thus stimulating economic growth in the City. Specific examples include replacement of lighting systems with longer lasting LED units which have a 3 times longer life thus reducing equipment costs and labor cost to procure and install such units. The same may be said, for example, of HVAC units replacement which reduces utility bills, maintenance calls, and future costs.
- **Participant health impacts** - Efficiency measures may improve indoor air quality, moisture control, draft regulation, and proper ventilation. These improvements can have a significant effect on health. A study in New Zealand of 40,000 low income home retrofits showed dramatic health improvements including 43% reduction in hospital admissions attributable to breathing ailments, a 39% reduction in lost work days, and a 23% reduction in lost school days (RAP, 9/2013)¹¹
- **Employee productivity** - Comfort, indoor air quality and computer screen glare have a significant effect on productivity. The Springfield, Ill energy board in 2003 sought to understand the effect on productivity of lighting retrofits and quickly found that the value of the productivity exceeded the value of the energy savings.(Aulux, 2011)
- **Property values** - Four recent studies have been conducted on the effect of LEED or Energy Star Building ratings on property values and found that values are increased anywhere from 3% to 25%. (Institute for Market Transformation, 2011). It also makes sense that rents and property values are positively affected by high quality, modern infrastructure elements such as lights, controls, HVAC equipment, and building envelopes.
- **Education** - For both the City and for non-City staff, implementation of energy efficiency programs provide value through education, which leads to better building performance, promotion of sustainability, and general knowledge.
- **Benefits to low income consumers** - While Louisville residents are fairly affluent, there remains a significant percentage of the population that are either truly low income or have difficulty “making ends meet.” Implementation of energy savings measures reduces non-payment of energy bills and other bills, disconnection, and attending effects such as health effects and food spoilage.
- **Stimulate economic activity** - Energy efficiency initiatives create jobs and increase local sales. Programs ultimately result in repairs, new equipment installations, and increased maintenance activity. These services are generally provided at a local level, as opposed to power line and power plant installations. Conservation programs result in the development of trade ally networks which can strongly affect local activity and sales.
- **Environmental considerations** - Pollution is a bad thing. There appears to be a strong consensus that global warming is a real and produces negative effects. Savings a kWh of energy reduces carbon emission by 1.93 pounds (<http://cleanenergyaction.org/learn-more/colorado-coal-plants/>). Energy use is highly diversified and buildings use over 50% of the world’s energy use.

¹¹ *Recognizing the Full Value of Energy Efficiency*, Lazar and Colburn, Regulatory Assistance Project (RAP), September 2013, www.raponline.org

Entities that have an opportunity to contribute to environmental sustainability while creating local positive outcomes (as described above) may be wise to act on such opportunities.

All of the above benefits have tangible economic, health and environmental effects. While the City may not benefit directly in each case, it does gain secondary benefits including increased taxes, positive promotion and view of the City, better infrastructure and access to incentive funds.

How and what goals should be set and measured?

HERE DISCUSS WHY THE GOALS AND STRUCTURE WAS SET UP.

Xcel Energy has already studied energy efficiency potential The following goals are based on Xcel Energy research, applied to Louisville.

Table 1: Energy Conservation Annual Goals Calculation

	Goal	Units
	1.27%	of kWh use
Electricity	1,976,738	kWh
	259	Homes
	1,541,855	KG CO2
	3,392,082	Lb CO2
	3,392,082	2.5 ft diameter exercise balls
Natural Gas	106,260	therms
	167	Homes
	632,247	kG CO2
	1,390,943	Lb CO2
	3,060,074	2.5 ft diameter exercise balls
Total	2,174,102	kG CO2
	4,783,024	Lb CO2
	6,452,156	2.5 ft diameter exercise balls

Louisville	kWh savings target Louisville	Thrm save target Louisville	20% stretch goal kWh	20% stretch goal therms
Residential, 7629 homes	640,024	52,529	768,029	63,034
C&I	1,471,875	35,125	1,766,250	42,150
Public	56,679	897	68,015	1,076
Total	2,168,578	88,550	2,602,293	106,260
CO2 emissions total, KG	1,647,281	521,537	1,976,738	625,844

What are the important steps to implementing a more proactive effort?

The following table provides a listing of the tactical approach to achieving the roadmap strategy and the reason each point is important.

Strategy	Comments
<i>"Government consumption"</i>	
Set and publish energy savings and renewable goals.	Goals needed for accountability. Feedback is a powerful tool for improvement
Track and report on government energy use.	Accountability and transparency. Needed: Study showing how auditing changes behaviors or identifies areas for improvement.
Implement cost effective energy measures.	Economics (by definition). Cite to examples from the Baseline Energy Report. Needed: Study showing that cost effective energy measures mandated/encouraged by government help improve energy efficiency.
Develop strategy to promote cost efficient energy conservation and renewable energy adoption and incorporate into work plans and budgets. (Approach discusses recognition and rewarding).	Needed: Study showing effect of recognition programs. Possible: Just quote Lea Yancey and her feedback from businesses that they want city recognition.

Track and report failure/success of implemented governmental energy conservation efforts and programs.	Accountability.
<i>"Ecosystem"</i>	
Set energy savings and renewable goals.	Accountability.
Actively track and report on City-wide energy use.	Accountability and transparency. Needed: Study showing how access to data encourages businesses and residents to be more sustainable?
Encourage and publicize residential household energy conservation efforts.	Needed: Study showing effect of recognition programs. Perhaps use Energy Star program as an example of an award/certification program.
Promote commercial energy efficiency and corporate citizenship.	Needed: Study showing peer pressure/competition resulting from increased data availability improves energy efficiency.
Develop and maintain energy efficiency website	Needed: Study showing cities with good websites have greater energy efficiency.



This work is the product of the Louisville Sustainability Advisory Board (LSAB):

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<http://louisvillecolorado.biz/government/boards-commissions/sustainability-advisory-board>